

What is claimed is:

1. A loop test apparatus of a packet routing bus comprising:
a transmitting node and a receiving node, each including a transmitting driver and a
receiving driver and each having a loop path for a data packet from the corresponding
transmitting driver to the receiving driver;
a transmitting bus master including a register for storing an address of one of the
transmitting node and receiving node for managing a transfer of the data packet on a transmitting
packet routing bus;
a receiving bus master including a register for storing an address of one of the
transmitting node and receiving node for managing a transfer of the data packet on a receiving
packet routing bus; and
a testing element for writing a test data packet to one of the transmitting node and the
receiving node and writing the address of one of the transmitting node and the receiving node to
transmit or receive the test data packet to or from the register of the corresponding bus master.

2. The loop test apparatus as claimed in claim 1, wherein the transmitting node
includes a transmitting loop register for storing a signal corresponding to whether the data packet
is routed as one of a data packet and a loop data packet.

3. The loop test apparatus as claimed in claim 1, wherein the receiving node includes

a receiving loop register for storing a signal corresponding to whether the data packet is routed as one of a data packet and a loop data packet.

4. The loop test apparatus as claimed in claim 2, wherein the transmitting loop register is between the testing element and the receiving node.

5 5. The loop test apparatus as claimed in claim 1, wherein the test data packet of the testing element is written to the transmitting node.

6. The loop test apparatus as claimed in claim 1, wherein the transmitting node reads the data packet from the receiving packet routing bus and the receiving node reads the data packet from the transmitting packet routing bus.

10 7. The loop test apparatus as claimed in claim 1, wherein the transmitting node is connected to a processor board of a base station system and the receiving node is connected to a trunk node of a base station controller.

8. The loop test apparatus as claimed in claim 1, further comprising a U-turn node connecting the transmitting packet routing bus to the receiving packet routing bus.

15 9. The loop test apparatus as claimed in claim 8, wherein the U-turn node includes a

loop register for storing a loop indicating signal used to loop a data packet from the receiving packet routing bus to the transmitting packet routing bus.

10. In a network board having a plurality of transmitting and receiving nodes each having a transmitting driver and a receiving driver, transmitting and receiving packet routing buses for transmitting and receiving data to and from the transmitting and receiving nodes, and transmitting and receiving bus masters for controlling the transmitting and receiving packet routing buses, a loop test method of a packet routing bus comprising the steps of:

writing a test data packet for routing in a receiving node to a test node for testing by a testing element;

writing the test data packet of the test node to the transmitting driver of the receiving node by the receiving bus master;

looping the test data packet from the transmitting driver of the receiving node to the receiving driver of the receiving node; and

routing the test data packet to the receiving driver of the test node by the transmitting bus master.

11. The loop test method as claimed in claim 10, wherein the test node acts as a transmitting node used to exclusively route the test data packet.

12. The loop test method as claimed in claim 10, wherein when writing the test data

packet to the test node, the testing element writes an address value of the receiving node used for receiving the test data packet to the transmitting and receiving bus masters and generates a loop indicating signal if the test data packet is received in the receiving node.

13. The loop test method as claimed in claim 12, wherein the step of writing the test data packet to the test node includes the steps of:

searching for a presence of the test data packet in the test node by the receiving bus master;

reading the test data packet from the receiving packet routing bus using a control signal if the test data packet is detected in the test node; and

writing the test data packet to the receiving node by the receiving bus master according to an address stored in the testing element.

14. The loop test method as claimed in claim 10, wherein the step of looping the test data packet from the transmitting driver to the receiving driver is performed in response to a loop indicating signal written to the receiving node.

15. The loop test method as claimed in claim 11, wherein the test data packet is routed to the test node according to a destination address in a data format field of the test data packet by the transmitting bus master.

16. In a network board having a plurality of transmitting and receiving nodes each having a transmitting driver and a receiving driver, transmitting and receiving packet routing buses for transmitting and receiving a data packet to and from the transmitting and receiving nodes, a U-turn node for U-turning the data packet of the receiving packet routing bus to the transmitting packet routing bus, a transmitting bus master for controlling the transmitting packet routing bus, and a receiving bus master for controlling the receiving packet routing bus, a loop test method of a packet routing bus comprising the steps of:

writing a test data packet for routing in a transmitting node to a test node for testing by a testing element;

writing the test data packet to the U-turn node by the receiving bus master;

writing the test data packet of the U-turn node to the transmitting node for testing by the transmitting bus master;

writing the test data packet of the transmitting node to the U-turn node for testing by the receiving bus master; and

routing the test data packet of the U-turn node to the test node by the transmitting bus master.

17. The loop test method as claimed in claim 16, wherein the testing element stores an address value of the transmitting node for receiving the test data packet when writing the test data packet in the transmitting nodes and generates a loop indicating signal for looping the test data packet if the test data packet is received in the transmitting node used for receiving the test

data packet.

18. The loop test method as claimed in claim 16, wherein the receiving bus master writes to the U-turn node both the test data packet and a loop indicating signal used to indicate whether the test data packet is read from one of the test node and the transmitting node for test.

5 19. The loop test method as claimed in claim 16, wherein the step of writing the test data packet to the U-turn node by the receiving bus master includes the steps of:

searching for a presence of the test data packet in both the test node of the transmitting nodes and the transmitting node for test by the receiving bus master;

reading the test data packet in the receiving packet routing bus using a control signal if the test data packet is detected in one of the test node and the transmitting node for test; and

10 writing to the U-turn node both the test data packet and a the loop indicating signal used to indicate whether the test data packet is read from one of the test node and the transmitting node for test according to a destination address of the test data packet by the receiving bus master.

15 20. The loop test method as claimed in claim 16, wherein the step of routing the test data packet of the U-turn node includes the step of referring to a destination address in a data format field of the test data packet if a loop indicating signal is not set as a loop value.